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Status of the Mu3e experiment

Saturday, 7 July 2018 15:00 (20 minutes)

The Mu3e experiment searches for the charged lepton flavour violating μ+ ⟶ e+e+e− decay and it aims at reaching an ultimate sensitivity of 10ˆ−16 on the branching frac- tion of the μ+ ⟶ e+e+e− decay, four orders of magnitude better than the current limit B(μ+ ⟶ e+e+e−) < 10ˆ−12. The experiment will be hosted at the Paul Scherrer Institute (Villigen, Switzerland) which delivers the most intense low momentum continuous muon beam in the world (up to few ×10ˆ8 μ/s). In order to be sensitive to the signal at this so high level, to reject the background and to run at the intensity beam frontier excel- lent detector performances are needed. To match those requests the experiment has been design based on completely new technologies. Extensive test beams have been performed to validate the detector design. The collaboration is concluding the detector R&D phase and is approaching the pre-engineering phase. A pre-engineering run is foreseen next year with sub-modules of each sub-detector followed by a full assembled pre-engineering run for 2020. The physics runs is expected to start in 2021 followed by at least three years of data taking. A review of the Mu3e experiment and its physics case will be given.

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